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WH-TOPICALIZATION AT THE SYNTAX-DISCOURSE INTERFACE IN ENGLISH SPEAKERS' L2 CHINESE GRAMMARS

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Although *wh*-words generally stay in situ in Chinese *wh*-questions, they can be topicalized. However, the *wh*-topicalization is determined at the syntax-discourse interface and has to be governed by discourse conditions; only discourse-linked (D-linked) *wh*-words can be topicalized, but non-D-linked ones cannot. This article reports on an empirical study that investigated English speakers' second language (L2) acquisition of Chinese *wh*-topicalization. The results of an acceptability judgment test indicate that advanced English speakers are sensitive to the discourse condition that governs the syntactic derivation of *wh*-topicalization in Chinese, as they were found to be able to make the distinction in their L2 Chinese by allowing D-linked, but not non-D-linked, *wh*-elements to topicalize. However, these results also indicate that *wh*-determiner phrases (DPs) and *wh*-noun phrases (NPs) differ in their sensitivity to presupposition background information in L2 Chinese *wh*-topicalization, and it is argued that the availability of the deictic feature in the *wh*-element involved is a variable affecting the D-linking properties of *wh*-elements in the development of L2 Chinese *wh*-topicalization, and this seems more likely to be a representational deficit than a processing problem.

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The aims of the study presented in this article are twofold: to examine second language (L2) acquisition of Chinese *wh*-topicalization by English speakers and to unveil properties of the L2 Chinese syntax-discourse interface underlying L2 Chinese *wh*-topicalization. In both linguistic research and L2 studies, Mandarin Chinese (hereafter, Chinese) has been widely considered a *wh*–in situ language in which the *wh*-word remains in its original position in *wh*-questions, unlike the *wh*-word in languages like English, which has to move to the left periphery of the *wh*-question. Recent years have witnessed an increasing number of studies of L2 acquisition of *wh*–in situ languages by speakers of *wh*-movement languages (see Kim, 2003; Yuan, 2007a, 2007b). However, *wh*-topicalization in *wh*–in situ languages seems to have received little attention in L2 research. This study is intended to fill in the gap.

Although the *wh*-word generally stays in situ in Chinese *wh*-questions, as in (1a),[1] it can be topicalized, moving from the base-generated position to the sentence initial position, as in (1b).

(1) a. *Ni zai chi shenme cai?*
you PROG eat what dish
"What dish(es) are you eating?"

b. [*Shenme cai*]$_i$ *ni meiyou chi* t_i*?*
what dish you didn't eat
"What dish(es) did you not eat?"

The movement of *shenme cai* "what dish" in (1b) has been analyzed as an instance of *wh*-topicalization, with the *wh*-phrase base generated as an object of the verb *chi* "eat" and raised to the initial position of the *wh*-question as a *wh*-topic (see Li, 1996; Pan, 2006; Tang, 1988; Wu, 1999; and Xu & Langendoen, 1985). The possible syntactic movement of the *wh*-topic to the initial position is determined at the syntax-discourse interface, and only discourse-linked (D-linked) *wh*-words can undergo topicalization.[2]

The relative difficulty of acquiring interface properties has very much been at the center of debate in recent L2 research. In their interface hypothesis, Sorace and Filiaci (2006) propose that narrow syntactic properties in L2 acquisition are completely acquirable, but grammatical aspects that involve an interface between the syntactic domain and other cognitive domains may not be fully acquirable in L2 acquisition. However, it has been argued that not all interfaces between syntax and other cognitive domains are problematic and that a distinction should be made between internal interfaces and external interfaces (Belletti, Bennati, & Sorace, 2007; Sorace, 2005, 2009; Sorace & Serratrice, 2009; Tsimpli & Sorace, 2006; and White, 2009). Yuan (2010) questions the holistic ways of L2 interface studies and proposes a variable-dependent approach, arguing that the success or failure in acquiring an interface

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in L2 may not necessarily be across the whole interface and that it may depend on different variables involved. Given that Chinese *wh*-topicalization involves the syntax-discourse interface, it is the aim of the present study of L2 acquisition of Chinese *wh*-topicalization to make valuable contributions to the understanding of L2 grammars in general and to the understanding of L2 interfaces in particular.

WH-TOPICALIZATION IN CHINESE QUESTIONS

It is clear from the two Chinese *wh*-questions in (1) that the movement of *shenme cai* "what dish" in (1b) cannot be motivated by checking the *wh*-feature because the *wh*-phrase can stay in situ in Chinese, as in (1a). What then triggers the movement of the *wh*-phrase in (1b), and where does it move to? Wu (1999) makes an important distinction between *wh*-topicalization questions and *wh*–in situ questions. For *wh*-topicalization questions to be felicitous, the interlocutors in the discourse must "have a set of things in the presupposition background," whereas in *wh*–in situ questions, "no particular set of things . . . is presupposed" (p. 83). The answer to the question in (1a) is not constrained by a particular set of dishes, and in fact, anything that can be called a *cai* "dish" can be used to answer the question in (1a). The answer to the question in (1b), however, is restricted to a set of dishes that has already been established in the previous discourse. For instance, if 10 people attended a dinner party—and everyone got food poisoning afterward except for Zhangsan—to find out what dish(es) caused the food poisoning, an investigator asked Zhangsan the question in (1b) with a preestablished knowledge of the set of dishes that was provided at the dinner party. Zhangsan was then naturally expected to answer the question by naming a dish or dishes only from the dishes provided at the dinner party. This makes it possible for the *wh*-phrase *shenme cai* "what dish" to be topicalized in (1b).

The examples in (2)–(4) demonstrate that only D-linked *wh*-words can undergo *wh*-topicalization and that non-D-linked *wh*-words cannot.

(2) a. *Ni xihuan shei?*
you like who
"Who do you like?"

b. **[Shei]$_i$ ni xihuan t_i?*
who you like
"Who do you like?"

(3) a. *Ni xihuan na yi ge ren?*
you like which one CL person
"Which person do you like?"

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b. [*Na yi ge ren*]$_i$ *ni xihuan* t_i*?*
which one CL person you like
"Which person do you like?"

(4) a. *Ni zui xihuan shei?*
you most like who
"Who do you like most?"

b. [*Shei*]$_i$ *ni zui xihuan* t_i*?*
who you most like
"Who do you like most?"

As *shei* "who" in (2) is a non-D-linked *wh*-word, it can only stay in situ, as in (2a), and it is not felicitous if it is topicalized in Chinese *wh*-questions, as in (2b). In (3), the *wh*-phrase is D-linked, which consists of *na* "which" and a nominal phrase *yi ge ren* "one person." In this case, both the speaker and the listener have a shared group of people in mind, and the person who answers the question is expected to choose one person from this group. This makes *wh*-topicalization possible in (3b). The sentences in (4) are identical to those in (2), except for the insertion of *zui* "most." Here it is possible to assume that the word *zui* "most" creates a presupposed group of people in (4) and converts the *wh*-word *shei* "who" in (4) to a D-linked *wh*-word and thus enables its topicalization in (4b).

It is also possible to make a distinction between *wh*-elements like *na* "which"–noun phrase (NP) and *wh*-elements like *shei* "who"; *na*-NP can be considered a *wh*-determiner phrase (DP) and *shei* a *wh*-NP. In *na*-NP, the *wh*-word is a determiner and selects a NP as its complement, as *na yi ge ren* "which person" in (3),[3] whereas with *shei*, the *wh*-word is the head of the *wh*-NP, as in (2) and (4).[4] The head of the DP is typically considered to be the locus of references and is believed to host expressions related to references. Following this line of analysis, it is possible to assume that the *wh*-determiner has a [+/−] deictic feature attached to it, which can link the *wh*-DP to the relevant discourse information and cause the *wh*-DP to be D-linked. This makes *wh*-topicalization possible in Chinese. In contrast, the *wh*-NP *shei* "who" has no deictic feature attached to it and has to rely on an element like *zui* "most" to be related to the discourse, as shown in (2) and (4). The adverb *zui* "most" is an adjunct, and it adjoins to the verb phrase (VP) in (4b) and c-commands the *wh*-NP *shei* "who" in object position. Here, it is *zui* "most" that licenses the *wh*-NP as a D-linked *wh*-element. This creates a presupposition background in the discourse and enables the *wh*-NP to topicalize.

Wu (1999) makes a clear distinction between *wh*-movement in English and *wh*-topicalization in Chinese. In English, the *wh*-word raises to the specifier (Spec) of the complementizer phrase (CP) to check the *wh*-feature,[5] whereas in Chinese, the *wh*-word raises to the Spec of the topic phrase (TopP) to check the topic feature, as shown in (5) for (4b).

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According to Wu, the topic feature in Chinese is strong and must be checked before spell-out.

(5) [$_{TopP}$ *Shei*$_i$ [$_{IP}$ *ni* [$_{VP}$ *zui* [$_{VP}$ *xihuan* t_i]]]]*?*
who you most like
"Who do you like most?"

The distinction between D-linked *wh*-words and non-D-linked *wh*-words has been recognized since Pesetsky (1987). In English, for example, the D-linked *wh*-word *which* is not subject to the superiority condition, as in (6).[6] The behavior of *which* is in striking contrast to that of *what* and *who* in (7), both of which Pesetsky considers to be non-D-linked *wh*-words. The superiority effect is also absent in Chinese D-linked *wh*-words, as shown in (8b), which is perfectly acceptable in Chinese in spite of the fact that the lower *wh*-phrase *shenme shu* "what book" raises over the higher *wh*-word *shei* "who" to the left periphery of the multiple *wh*-question. In (8), there is a presupposed set of books, and the answer must be from this set. The absence of the superiority effect should not be surprising if the movement in sentences like (8b) is considered an instance of *wh*-topicalization rather than *wh*-movement.

(6) a. [*Which singer*]$_i$ t_i *sang which song?*
b. [*Which song*]$_i$ *did which singer sing* t_i*?*

(7) a. [*Who*]$_i$ t_i *sang what song?*
b. *[*What song*]$_i$ *did who sing* t_i *?*

(8) a. *Shei zui xihuan shenme shu?*
who most like what book
"Who likes what book most?"

b. [*Shenme shu*]$_i$ *shei zui xihuan* t_i*?*
what book who most like
*"What book does who like most?"

Following Wu's (1999) assumption that the economy condition (Chomsky, 1995) only applies to *wh*-feature checking in *wh*-movement but not to *wh*-topicalization, economy considerations will rule out any derivation like (7b) in which the lower *wh*-phrase *what song* raises over the higher one *who,* given that the alternative derivation in (7a) in which the higher *wh*-word *who* raises is more economical. Unlike *wh*-movement, *wh*-topicalization involves checking the topic feature, which is assumed not to be inherently attached to a *wh*-word. As a result, it is legitimate to raise either the higher or the lower *wh*-word to serve as a topic; thus the absence of the superiority effect in *wh*-topicalization.

It is clear from the examples in (3), (4), and (8) that D-linking is a necessary condition but not a sufficient condition for *wh*-topicalization

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in Chinese because D-linked *wh*-words are allowed to stay in situ, as in (3a), (4a), and (8a). What then triggers *wh*-topicalization in Chinese? Pan (2006) argues that D-linked *wh*-words bear an underspecified [+/– topic] feature and that two requirements are involved in *wh*-topicalization: (a) a [+topic] feature and (b) a D-linked *wh*-word that is linked to a set of things or a group of people in the presupposition background. It seems feasible to assume that when the head of TopP has a [+topic] feature, it can trigger *wh*-topicalization, attracting a D-linked *wh*-word to Spec TopP to get its value and specification as a *wh*-topic with a [+topic] feature. However, the *wh*-topicalization triggered by the [+topic] feature at the head of TopP is subject to a condition under which the *wh*-word must have a D-linked reading to be topicalized, and the *wh*-topicalization must be licensed by a presupposed set of things or a presupposed group of people. In other words, both the [+topic] feature and the relevant discourse condition are indispensable for *wh*-topicalization in Chinese, and neither of them can trigger the *wh*-topicalization by itself. In English, the *wh*-word *which* is inherently D-linked lexically, whereas the other *wh*-words are not. However, Chinese *wh*-words are underspecified with regard to the D-linked reading and become D-linked when they are licensed by a relevant discourse—for example, by a set of things or a group of people in the presupposed background, as in (1b) and (3); by words like *zui* "most," as in (4), (5), and (8); or by both. This analysis is in conformity with the proposal that Chinese is a discourse-oriented language (see Huang, 1984, 1989; Shi, 1989; Tsao, 1977). A D-linked *wh*-word with a [–topic] feature stays in situ in Chinese *wh*-questions, as in (3a) and (4a). As discourse lies outside the linguistic computation, the syntax-discourse interface involved in Chinese *wh*-topicalization is considered an external interface in the sense of Belletti and colleagues (2007), Sorace (2005, 2009), Sorace and Serratrice (2009), Tsimpli and Sorace (2006), and White (2009). This interpretation of topicalized *wh*-words is also in conformity with the widely accepted definition of topics proposed by Li and Thompson (1976, 1981); that is, topics are generally definite and provide old, shared, and preestablished information. A *wh*-word becomes definite when it is D-linked because it is what both the speaker and the listener have in their presupposition.

In sum, *wh*-words can be topicalized to Spec TopP in Chinese, but the *wh*-topicalization takes place at the syntax-discourse interface. This syntactic movement has to be licensed by reference to a set of things or a group of people in the presupposition background; that is, only D-linked *wh*-words can be topicalized, and non-D-linked *wh*-words cannot. Unlike the *wh*-word *which* in English, which is inherently D-linked lexically, Chinese *wh*-words become D-linked when they get licensed by a set of things or a group of people in the presupposition background, by words like *zui* "most," or by both.

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L2 INTERFACE STUDIES

Why are adult L2 learners rarely able to acquire native competence of the target language? What are the possible causes of the divergence between L2 grammars and the native grammar? To find answers to these questions, an increasing number of L2 researchers have investigated interfaces in L2 grammars as a possible cause of the divergence. Sorace and Filiaci (2006) studied the interpretation of Italian intrasentential anaphora by native Italian speakers and English near-native speakers of Italian. Results showed that the English near-native speakers of Italian had nativelike interpretations of Italian null subject pronouns in both forward and backward anaphora conditions. However, with respect to overt subject pronouns, the near-native speakers were found to be divergent from the native Italian speakers, particularly in the interpretation of overt subject pronouns in the backward anaphora condition. On the basis of this finding, Sorace and Filiaci propose the interface hypothesis, according to which narrow syntactic properties in L2 acquisition are completely acquirable, but aspects of grammar that involve an interface between the syntactic domain and other cognitive domains may not be. This is believed to be due to the fact that L2 grammars have insufficient processing resources at their disposal to integrate the multiple types of information involved at the interfaces between syntax and other cognitive systems, and that these insufficient processing resources make it difficult for L2 grammars to coordinate the L2 syntax domain with other cognitive domains.

Evidence in support of the interface hypothesis has been found in a number of studies in the L2 literature. These include Hopp's (2004) study of the syntax-discourse interface in the acquisition of German scrambling by English and Japanese speakers and Sorace's (2004, 2005, 2006) investigations of pragmatic-discourse factors in near-native speakers' L2 Italian use of null and overt subjects. However, there is also evidence in the L2 literature showing that targetlike grammars are attainable in L2 interfaces and that vulnerability in L2 interfaces is not inevitable. For example, Dekydtspotter, Sprouse, and Thyre's (1999/2000) study showed that English-speaking learners of French and native French speakers exhibited similar knowledge of the syntax-semantics interface involving the interpretations of French quantification at a distance. Similar results were also obtained in studies by Borgonovo, Bruhn de Garavito, and Prévost (2005) and by Borgonovo, Bruhn de Garavito, Guijarro-Fuentes, Prévost, and Valenzuela (2006). In Borgonovo et al. (2005), English-speaking learners were found to be able to acquire the syntax-semantics interface involved in the choice of mood in relation to the specificity of the DP head in Spanish relative clauses, whereas Borgonovo et al. (2006) showed that Brazilian-Portuguese speakers were able to

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acquire the syntax-semantics interface regarding the specificity restrictions on null objects in their L2 Spanish.

A more fine-tuned approach to L2 interfaces has been proposed and argues that not all interfaces between syntax and other cognitive domains are problematic (Belletti et al., 2007; Sorace, 2005, 2006, 2009; Sorace & Serratrice, 2009; Tsimpli & Sorace, 2006; White, 2009). A distinction should therefore be made between internal interfaces and external interfaces, in which internal interfaces include syntax-morphology, syntax-lexicon, and syntax-semantics, and external interfaces include syntax-discourse and syntax-pragmatics. According to these researchers, internal interfaces involve different modules internal to the grammar. Because the operations are within the linguistic computation, internal interfaces are relatively easier for L2 learners to acquire. However, external interfaces (e.g., syntax-discourse and syntax-pragmatics interfaces) involve external conditions of contextual appropriateness, which are outside the grammar proper and therefore impose extra burdens on the processing of information from different resources.

The distinction between internal interfaces and external interfaces is useful in accounting for the findings in the L2 interface studies reviewed previously. Syntax-semantics interfaces, being internal in the linguistic computation and involving formal properties of the language system alone, are acquirable, whereas syntax-discourse or syntax-pragmatics interfaces are particularly problematic in L2 grammars because they involve external conditions and are likely to lead to interface vulnerability. This distinction is also supported by the results in Tsimpli and Sorace's (2006) study of Russian learners of Greek. In the study, Russian learners were found to be able to acquire the syntax-semantics interface involved in focusing and verb raising in their L2 Greek. In contrast, the vulnerability of the syntax-discourse interface was found in Russian learners' overuse of Greek overt subject pronouns, whose distribution was regulated by discourse factors.

However, the contrast between the relatively less problematic acquisition of internal interfaces and the vulnerability of external interfaces in L2 is not consistently supported by data of all relevant studies. Lozano and Mendikoetxea (2009) examined verb-subject (VS) structures using experimental data from English and Greek speakers' L2 Spanish and corpus data from Spanish and Italian speakers' L2 English. Their results indicated that both groups of learners were sensitive to discourse status (i.e., focus) in their L2s, but they had problems encoding the discourse information syntactically. This raises the possibility that vulnerability of L2 syntax-discourse interfaces can be related to a deficit in underlying representations of L2 grammars. Evidence in support of this argument is also provided in a study of Belletti and Leonini (2004), in which L2 learners of Italian were shown to have problems with the VS word order related to focus. There was, however, clear evidence that

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they were sensitive to the pragmatic focus of the construction because they were found to use stress—transferred from their first language (L1)—on the focused element in their L2 Italian. Belletti and Leonini attributed this problem to defective representations of a functional category (i.e., the focus projection) in L2 Italian grammars.

It should be pointed out that the studies of L2 interfaces reviewed previously have mostly dealt with L2 interface issues in holistic terms. In other words, researchers tend to treat the L2 syntax-semantics interface, the L2 syntax-discourse interface, or L2 interfaces in general in a domain-wide fashion. This is questioned by Yuan (2010), who proposed a variable-dependent approach to L2 interfaces, arguing that success or failure in acquiring a particular interface in L2 may not necessarily be across the whole interface domain and is likely to be affected by different variables involved. Yuan's argument was based on a study of the syntax-semantics interface involved in English speakers' acquisition of Chinese *wh*-words used as existential polarity words (EPWs). Chinese *wh*-words are ambiguous and can be interpreted as EPWs as well as interrogative words.[7] When used as EPWs, Chinese *wh*-words are subject to strict syntactic and semantic conditions. Semantically, an EPW must fall within a context in which the proposition containing the EPW is a nonfact or in which the truth value of the proposition is not positively fixed in a definite manner. Syntactically, an EPW must occur in the c-commanding scope of its licenser. The licensers for *wh*-words used as EPWs in Chinese include negators, the yes-no particle *ma*, words such as *ruguo* "if" in conditional clauses, uncertainty adverbs, the sentence final particle *le* indicating inference, nonfactive verbs, and so forth. The results of Yuan's study indicated that the syntax-semantics interface could be established between EPWs and some of their licensers but not the others, which provides evidence of a nondomain-wide success or failure in L2 acquisition of interfaces. On the basis of a variable-dependent approach, Yuan argued that English speakers' L2 acquisition of the syntax-semantics interface involved in Chinese *wh*-words used as EPWs is affected by a number of variables, including the categorical natures of individual elements involved in the interface relationship, the status of these elements in the target language speakers' grammar, the input that L2 learners are exposed to, crosslinguistic influences, and so forth.

However, Yuan's (2010) study only involved an internal interface (i.e., the syntax-semantics interface), which is considered to be relatively less problematic in the L2 acquisition of interfaces. Can Yuan's variable-dependent approach apply to L2 acquisition of external interfaces like the syntax-discourse interface, which is deemed to be vulnerable in L2 grammars (see Belletti et al., 2007; Sorace, 2005, 2009; Sorace & Serratrice, 2009; Tsimpli & Sorace, 2006; White, 2009)? This study is expected to provide an answer as it focuses on the syntax-discourse interface involved in English speakers' L2 acquisition of Chinese *wh*-topicalization.

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THE EMPIRICAL STUDY

Research Questions

The empirical study was guided by six principal research questions:

1. Can English-speaking learners of L2 Chinese establish a [+topic] feature at the head of TopP, which can trigger *wh*-topicalization and attract a D-linked *wh*-word to Spec TopP to get it valued and specified as a *wh*-topic with a [+topic] feature?
2. Are learners able to make a distinction in their L2 Chinese grammars between D-linked *wh*-words and non-D-linked *wh*-words by allowing only the D-linked, but not the non-D-linked, *wh*-words to be topicalized?
3. In English, only the *wh*-word *which* is D-linked, but the other *wh*-words are not, whereas in Chinese all *wh*-words can be D-linked when they are licensed by a set of things or a group of people in the presupposition background, by words like *zui* "most," or by both. Is there any crosslinguistic influence in English speakers' L2 Chinese grammars so that *na*-NP, which is the equivalent of *which*-NP in English, is more readily topicalized than other *wh*-words in English speakers' L2 Chinese?
4. Does the word *zui* "most" have a reinforcing power to make a *wh*-word more likely to be topicalized when the *wh*-word is D-linked?
5. Is the *wh*-topicalization affected by the distinction between *wh*-DPs and *wh*-NPs in English speakers' L2 Chinese grammars?
6. If English speakers are successful in establishing the syntax-discourse interface involved in the Chinese *wh*-topicalization, will the success be across the domain of the syntax-discourse interface? Is it possible that the syntax-discourse interface is established in certain aspects but not in others? If this occurs, what variables are involved that lead to partial success or partial failure in the syntax-discourse interface in L2 Chinese *wh*-topicalization?

Participants

To answer these questions, an empirical study was conducted involving 71 English-speaking learners of Chinese and a control group of 20 native speakers of Chinese. The English-speaking learners included students studying Chinese at universities in Beijing as well as students and lecturers of Chinese studies at some British universities. The lecturers were teaching Chinese or Chinese-related courses. A purpose-designed cloze test, which consisted of three passages written in both Chinese characters and pinyin (i.e., a Chinese phonetic writing system), was used as a proficiency test. The total score of the proficiency test was 40.

To examine *wh*-topicalization in L2 Chinese, it is a prerequisite to ensure that general topicalization has been established in the L2 Chinese

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grammars of the participants involved in the experiment. To do this, a stringent criterion was adopted to select participants who were considered to have acquired topicalization in Chinese. There were four types of NP-topicalization control sentences in categories I–IV, each of which contained three tokens (see Appendix). In total, there were 12 NP-topicalization sentences in the experiment. Only those learner participants who accepted at least 11 out of the 12 NP-topicalization sentences were included in this study; that is, 92% of their judgments of the sentences with the NP-topicalization had to be +1 or higher on the Likert scale provided.

On the basis of this criterion, 19 English speakers were selected for the study who had mastered topicalization in Chinese. Those who did not meet the criterion were eliminated from the analyses of L2 Chinese *wh*-topicalization. Detailed information on the English group (English) and the native Chinese group (NS) is provided in Table 1.

The result of a two-sample Kolmogorov-Smirnov test indicates that there was no significant difference between the two groups in their performance in the cloze test ($Z = 1.314$, $p = .063$). Given (a) the lack of a significant difference between the English group and the NS group in the cloze test, (b) the fact that the English group's average length of learning Chinese was 178 months (i.e., nearly 15 years), and (c) the fact that their average stay in China or Taiwan was 66 months (i.e., 5.5 years), the English group is considered a possible representative of English speakers' end states of L2 Chinese grammars.

Procedures

Each participant had to do an acceptability judgment test, which followed the cloze test. The acceptability judgment test included 45 types of sentences, of which 19 types were related to the investigation of *wh*-topicalization in L2 Chinese and the rest were either sentences

Table 1. Information on participants who mastered topicalization in Chinese

Group	Number of participants	Average age	Average months of learning Chinese	Average months in China or Taiwan	Mean scores in the cloze test
English	19	35	178	66	36 (3.47)
NS	20	23	N/A	N/A	39 (1.07)

Note. Values enclosed in parentheses represent standard deviations.

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relevant to studies of other L2 Chinese aspects or distracters. Each type had three tokens, and in total 57 test sentences were used for the study of L2 Chinese *wh*-topicalization. These 57 sentences were put into five categories (see Appendix for sample sentences of all the sentence types used for the investigation of L2 Chinese *wh*-topicalization). The test sentences were presented in Chinese characters. To minimize any possible effect of vocabulary on the participants' judgment, efforts were made to include only basic words of daily life, and additionally, English translations of some words—potentially unfamiliar to L2 Chinese learners—were provided. Instructions for the tasks in the experiment were given in the participants' native languages—that is, English and Chinese, respectively. Examples were given before the acceptability judgment test to demonstrate what the participants were expected to do.

In categories I–IV, the *wh*-topicalization in all the experimental sentences is licensed by a set of things or a group of people in the presupposition background—that is, a group of girls in category I, a set of films in category II, a group of people who write novels in category III, and a group of girls mentioned in the context in category IV. There is no such presupposition, however, involved in *wh*-questions in category V. As a result, the *wh*-arguments are not D-linked and cannot be topicalized. Each category had experimental sentences and control sentences in which the vocabulary was kept the same. All the experimental sentences had a *wh*-argument that was topicalized, but all the in situ control sentences had the *wh*-argument in situ. The difference between the experimental sentences in the same category was whether the word *zui* "most" was used to reinforce the D-linking of the *wh*-argument; the difference between control sentences was that the in situ control sentence had a *wh*-argument in situ, whereas the NP-topicalization control sentence had a NP-argument that was topicalized.

Participants were asked to judge the acceptability of each sentence by circling a number on a Likert scale. In the acceptability judgment test, +3 stood for *completely acceptable*, +2 for *likely to be acceptable*, +1 for *possibly acceptable*, 0 for *I don't know*, –1 for *possibly unacceptable*, –2 for *likely to be unacceptable*, and –3 for *completely unacceptable*. Any mean score of +1 or above that the participant assigned to a particular type was treated as acceptance for that type of sentence. Conversely, any mean score of –1 or below was treated as a rejection. Mean scores around 0 were treated as signs that participants were not sure.

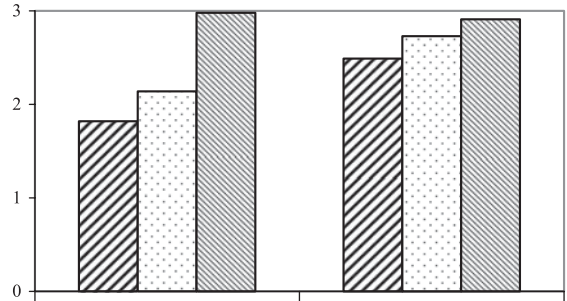
Results

The results presented in this section are based on the judgment data of *wh*-questions by the English and NS groups. The judgment data of

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sentences with a topicalized NP (i.e., the NP-topicalization control sentences) are not included because participants in the English group have all met the stringent criterion for Chinese topicalization and are therefore considered to have established Chinese topicalization in their L2 Chinese grammars. In Figure 1, it is possible to see that—like the NS group—the English group accepted *wh*-questions with a topicalized D-linked *na*-NP "which-NP." The same was found in *wh*-questions with a topicalized D-linked *na*-NP when it was reinforced by *zui* "most." The results of Kolmogorov-Smirnov tests show that there was no significant difference between the two groups in their judgments of either type of sentences. For *wh*-questions with a D-linked topicalized *na*-NP, $Z = 1.002$, $p = .268$; for *wh*-questions with a D-linked topicalized *na*-NP + *zui*, $Z = 1.183$, $p = .122$. In regard to judgments of *wh*-questions when *na*-NP was left in situ, the result of a Kolmogorov-Smirnov test indicates that no significant difference existed between the two groups, $Z = 0.304$, $p = 1.000$.

These results suggest that a D-linked *which*-NP is allowed to be topicalized in English speakers' L2 Chinese grammars as long as the Chinese topicalization is established in their L2 Chinese grammars. However, as the *wh*-word *which* is an inherently D-linked word in English, it could be argued that the English group's nativelike behaviors in judging Chinese *wh*-questions with *na*-NP topicalized may be influenced



	English	NS
Topicalized D-linked *which*-NP	1.82	2.49
Topicalized D-linked *which*-NP + *most*	2.14	2.73
D-linked *which*-NP in situ	2.98	2.91

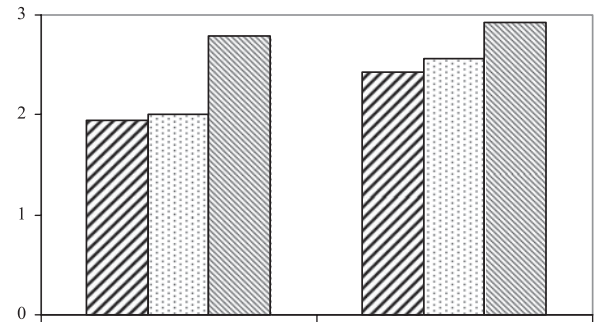
Figure 1. Mean scores of groups' judgments of Chinese *wh*-questions with D-linked *which*-NP topicalized, with *most* and *which*-NP topicalized, and with *which*-NP in situ (see examples in Appendix, section I).

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by properties of the *wh*-word *which* in their native language. For this reason, it is necessary to look at the behaviors of other *wh*-words in the English group's L2 Chinese when they are D-linked and topicalized.

Figure 2 presents the results of the judgments of *wh*-questions with a topicalized D-linked *shenme*-NP "what-NP," *wh*-questions with a topicalized D-linked *shenme*-NP reinforced by *zui* "most," and *wh*-questions with a D-linked *shenme*-NP left in situ. The results of Kolmogorov-Smirnov tests indicate that there was no significant difference between the two groups in their judgments of any of the sentence types. For the *wh*-questions with a topicalized D-linked *shenme*-NP, $Z = 0.748$, $p = .631$; for the *wh*-questions with a topicalized D-linked *shenme*-NP reinforced by *zui*, $Z = 0.863$, $p = .447$; and for the *wh*-questions with a D-linked *shenme*-NP in situ, $Z = 0.682$, $p = .741$. These results clearly demonstrate that it is possible to topicalize D-linked *shenme*-NP in English speakers' L2 Chinese *wh*-questions in spite of the fact that the English equivalent of *shenme*-NP is not D-linked in their native language.

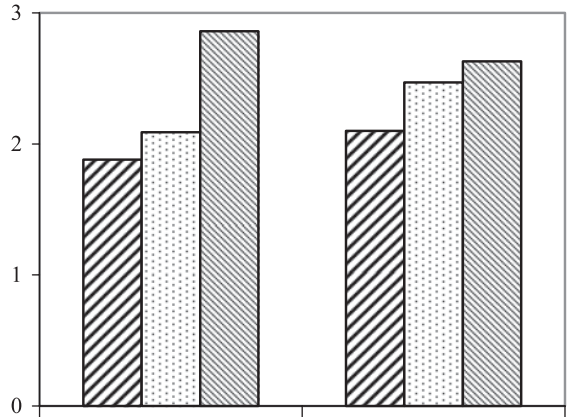
Figure 3 presents results concerning another D-linked *wh*-argument *sheide*-NP "whose-NP" in Chinese *wh*-questions. The English group's judgment was similar to that of the NS group, and the participants in the English group accepted (a) Chinese *wh*-questions with the D-linked *wh*-argument topicalized, (b) *wh*-questions with a D-linked topicalized



	English	NS
Topicalized D-linked *what*-NP	1.95	2.43
Topicalized D-linked *what*-NP + *most*	2	2.57
D-linked *what*-NP in situ	2.79	2.93

Figure 2. Mean scores of the groups' judgments of Chinese *wh*-questions with D-linked *what*-NP topicalized, with *most* and D-linked *what*-NP topicalized, and with D-linked *what*-NP in situ (see examples in Appendix, section II).

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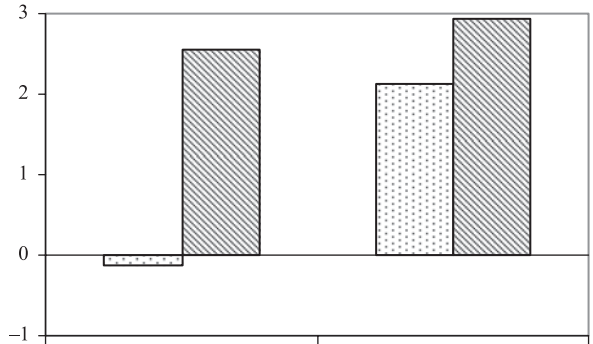
	English	NS
Topicalized D-linked *whose*-NP	1.88	2.1
Topicalized D-linked *whose*-NP + *most*	2.09	2.47
D-linked *whose*-NP in situ	2.86	2.63

Figure 3. Mean scores of the groups' judgments of Chinese *wh*-questions with D-linked *whose*-NP topicalized, with *most* and D-linked *whose*-NP topicalized, and with D-linked *whose*-NP in situ (see examples in Appendix, section III).

wh-argument reinforced by *zui* "most," and (c) *wh*-questions with the D-linked *wh*-argument in situ. The results of Kolmogorov-Smirnov tests show that there was no significant difference between the two groups in their judgments of any of these sentence types. For the *wh*-questions with a topicalized D-linked *sheide*-NP, $Z = 0.394$, $p = .998$; for the *wh*-questions with a topicalized D-linked *sheide*-NP reinforced by *zui* "most," $Z = 1.060$, $p = .211$; and for the *wh*-questions with a D-linked *sheide*-NP in situ, $Z = 0.723$, $p = .673$.

The results, however, concerning *shei . . . zui* "who . . . most" present a different picture, as shown in Figure 4. Although the English group, like the NS group, allowed the D-linked *shei* "who" to remain in situ in their L2 Chinese *wh*-questions, unlike the NS group, they did not accept Chinese *wh*-questions with the D-linked *shei* topicalized—despite the presence of the word *zui* "most" in the sentence. The results show that participants in the English group were indeterminate about the acceptability of Chinese *wh*-questions with the D-linked *shei* topicalized because their mean

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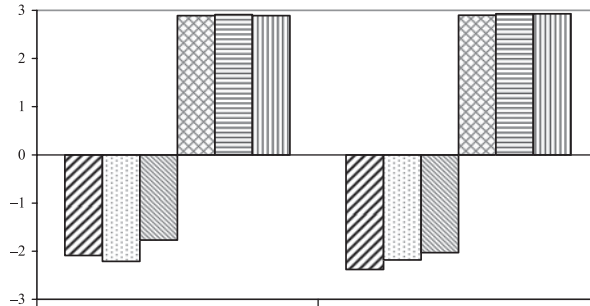
	English	NS
Topicalized D-linked *who . . . most*	–0.12	2.12
D-linked *most . . . who* in situ	2.56	2.93

Figure 4. Mean scores of the groups' judgments of Chinese *wh*-questions with *most* and D-linked *who* topicalized, and with *most* and *who* in situ (see examples in Appendix, section IV).

score in judging this type of *wh*-questions was –0.12. The result of an independent-samples *t* test shows that a significant difference existed between the two groups in their judgments of the *wh*-questions with topicalized *shei . . . zui*, $t(37) = 5.029$, $p < .001$. However, no significant difference was found in a Kolmogorov-Smirnov test between the two groups in their judgments of *wh*-questions *zui . . . shei* "most . . . who" in situ, $Z = 0.674$, $p = .755$. The English group's nonacceptance of the topicalization of the D-linked *shei* with the presence of *zui* in the *wh*-question is rather unexpected, and this provides some evidence that not all D-linked *wh*-arguments can be topicalized in L2 Chinese *wh*-questions.

The results presented have all been concerned with D-linked *wh*-arguments. To examine *wh*-topicalization in L2 Chinese, it is also necessary to find out whether L2 grammars, at the same time, are able to reject topicalization of non-D-linked *wh*-arguments in L2 Chinese *wh*-questions. Figure 5 presents data of this type. The English group, like the NS group, rejected incorrect *wh*-questions with non-D-linked *shenme*-NP "what-NP," *shenme* "what," or *shei* "who" that were topicalized. At the same time, they were nativelike in accepting *wh*-questions with these non-D-linked *wh*-arguments in situ. No significant difference was found in independent-samples *t* tests between the two groups in rejecting *wh*-questions with a topicalized non-D-linked *shenme*-NP, $t(37) = -1.799$, $p = .078$, and in rejecting incorrect *wh*-questions with topicalized non-D-linked *shenme* and *shei*—for *shenme*, $t(37) = 0.116$, $p = .909$; for *shei*,

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	English	NS
*Topicalized non-D-linked *what*-NP	–2.09	–2.38
*Topicalized non-D-linked *what*	–2.21	–2.18
*Topicalized non-D-linked *who*	–1.77	–2.03
Non-D-linked *what*-NP in situ	2.89	2.9
Non-D-linked *what* in situ	2.91	2.93
Non-D-linked *who* in situ	2.89	2.93

Figure 5. Mean scores of the groups' judgments of ungrammatical Chinese *wh*-questions with non-D-linked *what*-NP, *what*, and *who* topicalized, and grammatical *wh*-questions with non-D-linked *what*-NP, *what*, and *who* in situ (see examples in Appendix, section V).

$t(37) = -0.939$, $p = .354$. Like the NS group, the English group readily accepted *wh*-questions with non-D-linked *wh*-arguments in situ, and there was no significant difference in Kolmogorov-Smirnov tests between the two groups in accepting the non-D-linked *shenme*-NP in situ, $Z = 0.164$, $p = 1.000$, and in accepting *wh*-questions with the non-D-linked *shenme* and *shei* in situ—for *shenme*, $Z = 0.164$, $p = 1.000$; for *shei*, $Z = 0.329$, $p = 1.000$.

Figure 4 shows that the English group did not accept Chinese *wh*-questions with the D-linked *shei* "who" topicalized in spite of the presence of the word *zui* "most" in the sentence. An examination of individual data reveals that of the 19 participants in the English group, only 3 participants were found to be able to consistently accept the correct topicalization of the D-linked *shei* while—at the same time—also consistently rejecting the incorrect topicalization of the non-D-linked *shei* in their L2 Chinese *wh*-questions.[8] Although this suggests that Chinese *wh*-questions with the D-linked *shei* topicalized are not completely unacquirable by English speakers, the fact that only a very small number of very advanced learners managed to do this indicates that this is a vulnerable area in English speakers' L2 Chinese grammars.

DISCUSSION

Table 2 provides a summary of the findings in the empirical study of L2 Chinese *wh*-topicalization. English speakers, in general, are able to

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Table 2. Summary of groups' judgments of *wh*-topicalization

Types of *wh*-elements	English group	NS group
D-linked *which*-NP	√	√
D-linked *which*-NP + *most*	√	√
D-linked *what*-NP	√	√
D-linked *what*-NP + *most*	√	√
D-linked *whose*-NP	√	√
D-linked *whose*-NP + *most*	√	√
D-linked *who* + *most*	?^{s}	√
*Non-D-linked *what*-NP	X	X
*Non-D-linked *what*	X	X
*Non-D-linked *who*	X	X

Note. √ = the group accepted the type of sentences (the mean score being ≥ +1); X = the group rejected the type of sentences (the mean score being ≤ −1); ? = the group's judgment was indeterminate (the mean score being between −1 and +1); ^{s} = the group's judgment was significantly different from that of the native Chinese group.

topicalize D-linked *wh*-elements in their L2 Chinese *wh*-questions, and this provides evidence that English speakers' L2 Chinese can establish a [+topic] feature at the head of TopP that can trigger *wh*-topicalization and attract a D-linked *wh*-word to Spec TopP where it is valued and specified as a *wh*-topic with a [+topic] feature. Additionally, these data indicate that English speakers are able to reject ungrammatical Chinese *wh*-questions in which non-D-linked *wh*-elements are incorrectly topicalized, which is illustrated by the contrast in the English group's judgment between the D-linked *which*-NP, *what*-NP, and *whose*-NP on the one hand and the non-D-linked *what*-NP, *what*, and *who* on the other. This suggests that English speakers' L2 Chinese grammars are sensitive to discourse conditions that govern *wh*-topicalization in Chinese and that their L2 Chinese grammars allow only D-linked—but not non-D-linked—*wh*-elements to topicalize in their L2 Chinese *wh*-questions. The findings here do not seem to lend support to Sorace and Filiaci's (2006) interface hypothesis that narrow syntactic properties are completely acquirable, but grammatical aspects that involve an interface between the syntactic domain and other cognitive domains may not be fully acquirable in L2 acquisition. These data show that as long as the Chinese topicalization is established in their L2 Chinese grammars, the *wh*-topicalization in English speakers' L2 Chinese can be governed by discourse conditions that operate at the syntax-discourse interface. The [+topic] feature in the head of TopP can attract a D-linked *wh*-element to Spec TopP where it is valued and specified as a *wh*-topic with a [+topic] feature in L2 Chinese.

Additionally, the distinction between internal and external interfaces in terms of L2 acquisition difficulty (Belletti et al., 2007; Sorace, 2005,

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2006, 2009; Sorace & Serratrice, 2009; Tsimpli & Sorace, 2006; White, 2009) is not supported by the results of our study. According to this proposal, internal interfaces—like syntax-semantics and syntax-morphology—involve internal features and operate within the linguistic computation. They are, therefore, relatively easier for L2 learners to acquire. However, syntax-discourse and syntax-pragmatics interfaces are likely to be a locus of persistent difficulty in L2 acquisition because they are external interfaces involving external conditions, which may impose an extra burden on processing information from different resources. As *wh*-topicalization in Chinese is subject to a discourse requirement that both the speaker and the hearer must have a set of things or a group of people in the presupposition background, it obviously involves the syntax-discourse interface, an external interface that, according to many researchers, is assumed to cause persistent difficulty in L2 acquisition.[9] Given that the participants in the English group were successful in establishing the syntax-discourse interface in their L2 acquisition of Chinese *wh*-topicalization, it seems reasonable to argue that external interfaces, like the syntax-discourse interface, may not always be vulnerable in L2 acquisition and that they are acquirable, at least in advanced stages.

However, the English group's success in establishing the syntax-discourse interface in their L2 Chinese *wh*-topicalization is not across the board. Although there were three participants in the English group who were found to be able to consistently accept the correct topicalization of the D-linked *shei* "who" and also consistently reject the incorrect topicalization of the non-D-linked *shei* in their L2 Chinese *wh*-questions, the *wh*-word *shei*, in general, did not have D-linking properties in the *shei . . . zui* "who . . . most" *wh*-question in the English group's L2 Chinese grammars. As shown in Table 2, the participants in the English group generally did not accept the topicalization of the D-linked *shei* in the *wh*-question. This forms a contrast with the behaviors of the other D-linked *wh*-arguments, which were readily topicalized in the English group's L2 Chinese. What causes the deviant behavior of *shei* in L2 Chinese *shei . . . zui wh*-questions? The problem seems unlikely to be due to unsuccessful integration of syntax and discourse in L2 Chinese or to limited resources available to L2 learners to process various types of information from different domains. If this were the case, it would be difficult to explain (a) why there was no integration or processing problem with the other types of *wh*-topicalization in English speakers' L2 Chinese and (b) why they were able to make a distinction between D-linked and non-D-linked *wh*-topicalization in the other types of *wh*-words, which obviously demonstrates that advanced English-speaking learners of Chinese are sensitive to the discourse conditions governing the syntactic derivation of *wh*-topicalization in Chinese.

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An examination of all the D-linked *wh*-elements in Table 2 indicates that there is a difference in the composition between *shei* "who" and the other *wh*-elements. *Shei* is a simplex *wh*-argument, whereas the other *wh*-elements are complex *wh*-arguments that consist of a *wh*-word and a NP. On the basis of the difference in composition, it could be argued that complex *wh*-arguments are D linked in L2 Chinese but simplex *wh*-arguments are not. However, this possibility is ruled out by the fact that the English group correctly rejected *wh*-topicalization of the non-D-linked *what*-NP, which is a complex *wh*-argument—as shown in Figure 5 and Table 2. This clearly shows that *wh*-topicalization in English speakers' L2 Chinese is not simply governed by the pure composition of the *wh*-argument involved and that not all complex *wh*-arguments are D-linked in L2 Chinese.

It is necessary to note that in the experiment, the word *zui* "most" was inserted into *wh*-questions with a D-linked *wh*-element, which was designed to provide reinforcement to the D-linking properties of the *wh*-element in the *wh*-questions. The reinforcement of *zui* does not seem to have much effect on L2 Chinese grammars because only in the native Chinese grammar—but not in English speakers' L2 Chinese grammars—could *shei* "who" be licensed as a D-linked *wh*-argument by *zui* and become topicalized. In other words, *shei* is generally not licensed as a D-linked *wh*-word in L2 Chinese *wh*-questions in spite of the presupposed discourse information available, which provides a group of people in the presupposition background. The English group's correct rejection of *wh*-questions with the non-D-linked *shenme*-NP "what-NP," *shenme* "what," and *shei* "who," as shown in Figure 5 and Table 2, indicates that L2 Chinese grammars are sensitive to the absence of presupposed discourse information required for *wh*-topicalization. However, not all *wh*-elements in L2 Chinese grammars are susceptible to the presupposed information available with regard to *wh*-topicalization. Recall that a distinction is made between *wh*-DPs (e.g., *na*-NP "which-NP," *sheide*-NP "whose-NP," and *shenme*-NP "what-NP") and *wh*-NPs (e.g., *wh*-elements like *shei* "who"). In *wh*-DPs, the *wh*-word is a determiner and selects a NP as its complement, whereas in *wh*-NPs, the *wh*-word is the head of the *wh*-NP. These results suggest that L2 *wh*-determiners are sensitive to presupposed discourse information and can be topicalized in L2 Chinese together with their NP complement. However, the *wh*-NP *shei* "who" in English speakers' L2 Chinese is not susceptible to such discourse information available as far as *wh*-topicalization is concerned, and as a result, it cannot be readily topicalized in their L2 Chinese *wh*-questions. As previously argued, the head of DP is typically considered to be the locus of references and is believed to host expressions related to references. On the basis of this analysis, it is possible to assume that the *wh*-determiner has a [+/−] deictic feature attached to it, which can link the *wh*-DP to the relevant discourse information, turn

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the *wh*-DP to be D-linked, and make it possible to topicalize in L2 Chinese. In contrast, the *wh*-NP *shei* "who," which has no deictic feature attached to it, is insusceptible to the discourse-related information in L2 Chinese. Thus, the only possible way to make D-linking possible is for *zui* "most" in the sentence to license *shei* "who" as a D-linked *wh*-element. However, if the word *zui* is unable to wire a link between the *wh*-word and the discourse information available, as was believed to be the case in English speakers' L2 Chinese, then this may explain why topicalization of *shei* "who" appears to be problematic in L2 Chinese.[10]

A similar case of the licenser-licensee relationship breakdown is reported in a L2 Chinese study by Yuan (2010), in which the Chinese inferential particle *-le* and a special form of yes-no questions *A-not-A*, which can license Chinese *wh*-words as EPWs in the native Chinese grammar, did not have such a licensing power in English and Japanese speakers' L2 Chinese grammars, even though these items can fulfill their semantic functions in their L2 Chinese grammars. In contrast, the syntax-semantics interface was found to be established in L2 Chinese between Chinese *wh*-words as EPWs and other licensers like nonfactive verbs, uncertainty adverbs, negators, *if*-words in conditional clauses, and so forth. On the basis of this evidence, Yuan argues that the L2 acquisition of interfaces may not always take place in a holistic manner and may depend on different variables, such as the categorical natures of individual elements involved in the interface relationship, the status of these elements in the target language speakers' grammar, the input that L2 learners are exposed to, cross-linguistic influences, and so forth. It seems that Yuan's variable-dependent approach applies to both L2 internal interfaces and L2 external interfaces because neither the success in the L2 Chinese syntax-semantics interface, as reported in Yuan (2010), nor the success in the L2 Chinese syntax-discourse interface, as reported in this study, was found to be across the whole interface domain. Both seemed to depend on different variables. In this study, the lack of the deictic feature in *wh*-NPs like *shei* "who" is believed to make *wh*-elements of this type less susceptible to the presupposed discourse information than *wh*-DPs.[11] Furthermore, the lack of the licenser-licensee relationship between *zui* "most" and *shei* "who" in L2 Chinese makes it difficult to turn *shei* into a D-linked *wh*-element. The difference between *wh*-DPs and *wh*-NPs is likely to be a variable affecting *wh*-topicalization in L2 Chinese.[12]

Questions must then be asked as to why it should be difficult to attach a deictic feature to *wh*-NPs like *shei* "who" and why the licenser-licensee relationship between *zui* "most" and *shei* should be vulnerable in English speakers' L2 Chinese grammars.[13] It seems likely that L2 grammars can only see the deictic feature locally—that is, the deictic feature

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attached to the *wh*-determiner, which licenses the whole *wh*-phrase (i.e., *wh*-determiner + NP) as a D-linked *wh*-element. However, English speakers are not sensitive to a licenser like *zui*, an adjunct that adjoins to the VP of the sentence and c-commands the *wh*-element in object position. Because the licenser *zui* is distant from the *wh*-element, it cannot properly function as a licenser for *wh*-NPs in L2 Chinese grammars, and as a result, *wh*-NPs are not D-linked and cannot be topicalized in L2 Chinese. The implication of this analysis is that the licenser-licensee relationship in L2 grammars can be established in the same way as that in the native grammar as long as the establishment only requires local licensing; when the licensing is required at a macro-level, such a relationship may become vulnerable in L2 grammars. Future studies must be carried out to investigate this particular aspect of L2 grammars.

CONCLUSION

The study reported in this article shows that English speakers' L2 Chinese can establish a [+topic] feature at the head of TopP, which can trigger *wh*-topicalization and attract a D-linked *wh*-element to Spec TopP. Additionally, English speakers are sensitive to the discourse condition that governs the syntactic derivation of *wh*-topicalization in Chinese because they were found to be able to make the distinction in their L2 Chinese grammars by allowing D-linked—but not non-D-linked—*wh*-elements to topicalize. This provides evidence that external interfaces like the syntax-discourse interface are acquirable and may not always be vulnerable in L2 acquisition. However, these results also indicate that the successful interface in L2 grammars may not necessarily take place in a holistic manner. It has been found in this study that *wh*-DPs and *wh*-NPs differ in their sensitivity to presupposition background information in L2 Chinese *wh*-topicalization, and it is argued that the availability of the deictic feature in the *wh*-element involved is likely to be a variable that affects the D-linking properties of *wh*-elements in the development of L2 Chinese *wh*-topicalization. This analysis implies that the vulnerability involved in English speakers' *wh*-topicalization of *shei* "who" is more likely to be representational in nature than to be related to a processing problem. This, however, does not mean that all problems with L2 external interfaces are likely to result from a deficit in underlying representations of L2 grammars. Interfaces, whether internal or external, are complex enterprises in L2 acquisition and may not always lead to domain-wide problems.

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NOTES

1. The abbreviations used in the glosses are as follows: PROG = progressive aspect marker; CL = classifier.

2. According to an anonymous *SSLA* reviewer, the *wh*-topic could also be assumed to be base generated in topic position. Although Chinese does allow base-generated topics, empirical evidence in Dugarova (2010, 2011) has clearly shown that *wh*-topics in both the native Chinese grammar and English speakers' L2 Chinese grammars are the results of *wh*-topicalization because they are sensitive to the complex NP island and reconstruction constraints.

3. Strictly speaking, the *wh*-determiner *na* "which" in the *wh*-phrase in (3) selects a numeral phrase headed by *yi* "one," which, in turn, selects a classifier phrase headed by *ge* (a Chinese classifier), and the noun *ren* "person" is the complement selected by the classifier. For the sake of simplicity, all these phrases are collapsed, and the label NP has been used to cover all of them.

4. The analysis used in this study has some resemblance to that by Adger (2003), who makes a distinction between *what*, *which*, and *who*. He calls *which* and *what wh*-determiners because they can combine with nominal phrases to form larger *wh*-DPs, such as "what kind of actor," "which poem about Achilles," and so forth. Although he does not call *who* a *wh*-NP, as is done in this article, he considers it a lexical item because *who* cannot combine with a syntactic complement and project a larger *wh*-phrase.

5. See Yuan (2007a, 2007b) for a review of analyses of *wh*-feature checking in Chinese.

6. Wu (1999) assumes that the D-linked *wh*-word in English has a dual function: to check the *wh*-feature as well as the topic feature.

7. In addition to EPWs and interrogative words, Chinese *wh*-words can also be interpreted as universal quantifiers. See Yuan (2007a, 2007b, 2009) for analyses of Chinese *wh*-words used as interrogative words and universal quantifiers in L2 Chinese.

8. The criterion for consistency adopted was three out of the three tokens used in each sentence type. As an anonymous *SSLA* reviewer correctly points out, three tokens is a small number, and future studies should examine this particular type more closely.

9. Strictly speaking, it could be argued that pragmatics is also involved in Chinese *wh*-topicalization. However, the terms *discourse* and *discourse-linking* are used to cover all discourse and pragmatic factors involved.

10. Clearly, a more focused investigation is required in this area. For example, this can be further tested with other *wh*-NPs, such as *shenme* "what" in the sentence in (i).

(i) (ji, ya, yu, zhurou, niurou, yangrou,) shenme$_i$ ni xianzai zui xiang chi t_i?
(chicken, duck, fish, pork, beef, lamb) what you now most want eat
"(Of chicken, duck, fish, pork, beef, and lamb,) what would you most like to eat now?"

11. An anonymous *SSLA* reviewer points out that although this study looks into the syntax-discourse interface, the test sentences used for eliciting data were mainly single sentences. She or he believes that context should have been provided for the test sentences. It is indeed the case that most test sentences were presented to the participants in the experiment without any additional discourse or context information. However, this does not invalidate the findings in this study. D-linked *wh*-words do not necessarily need context to be D-linked, and the behavior of *which* is a typical example in English (see Pesetsky, 1987). This is supported by our findings in the experiment that, like native Chinese controls, English speakers were found to be able to make the distinction in their L2 Chinese grammars by allowing D-linked, but not non-D-linked, *wh*-elements to topicalize, even though no context was provided. What was most interesting in the experiment was that the *wh*-NP *shei* "who" was found to be vulnerable in English speakers' *wh*-topicalization, in spite of the fact that contexts were provided for test sentences of this type (see IV1, IV2, and IV3 in the Appendix), and this was the only type for which contexts were provided in the experiment.

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12. It is not clear from this study whether this could be caused by L1 transfer or related to a general problem in L2 acquisition of Chinese. It should be left for future research with groups of different L1s.

13. We are very grateful to an anonymous *SSLA* reviewer for these insightful questions.

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APPENDIX

Categories and sentence types:

I. D-linked *na*-NP "which-NP"

1. *Wh*-questions with D-linked *na*-NP "which-NP" topicalized (experimental)
   Na yi ge nuhai ta bu xihuan?
   which one CL girl he not like
   "Which girl does he not like?"
2. *Wh*-questions with D-linked *na*-NP "which-NP" topicalized + reinforcement of *zui* "most" (experimental)
   Na yi ge nuhai ta zui bu xihuan?
   which one CL girl he most not like
   "Which girl does he dislike most?"
3. *Wh*-questions with D-linked *na*-NP "which-NP" in situ (in situ control)
   Ta zui bu xihuan na yi ge nuhai?
   he most not like which one CL girl?
   "Which girl does he dislike most?"
4. Affirmative sentences with a topicalized NP (NP-topicalization control)
   Na ge nuhai ta zui bu xihuan.
   that CL girl he most not like
   "He most dislikes that girl."

II. D-linked *shenme*-NP "what-NP"

1. *Wh*-questions with D-linked *shenme*-NP "what-NP" topicalized (experimental)
   Shenme dianying ni xihuan kan?
   what film you like watch
   "What film do you like (to watch)?"
2. *Wh*-questions with D-linked *shenme*-NP "what-NP" topicalized + reinforcement of *zui* "most" (experimental)
   Shenme dianying ni zui xihuan kan?
   what film you most like watch
   "What film do you like (to watch) most?"
3. *Wh*-questions with D-linked *shenme*-NP "what-NP" in situ (in situ control)
   Ni zui xihuan kan shenme dianying?
   you most like watch what film
   "What film do you like (to watch) most?"
4. Affirmative sentences with a topicalized NP (NP-topicalization control)
   Faguo dianying wo zui xihuan kan.
   French film I most like watch
   "I like (to watch) French films most."

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III. D-linked *sheide*-NP "whose-NP"

1. *Wh*-questions with D-linked *sheide*-NP "whose-NP" topicalized (experimental)
   Sheide xiaoshuo Zhangsan xihuan kan?
   whose novel Zhangsan like read
   "Whose novels does Zhangsan like (to read)?"
2. *Wh*-questions with D-linked *sheide*-NP "whose-NP" topicalized + reinforcement of *zui* "most" (experimental)
   Sheide xiaoshuo Zhangsan zui xihuan kan?
   whose novel Zhangsan most like read
   "Whose novels does Zhangsan like (to read) most?"
3. *Wh*-questions with D-linked *sheide*-NP "whose-NP" in situ (in situ control)
   Zhangsan zui xihuan kan sheide xiaoshuo?
   Zhangsan most like read whose novel
   "Whose novels does Zhangsan like (to read) most?"
4. Affirmative sentences with a topicalized NP (NP-topicalization control)
   Luxunde xiaoshuo Zhangsan zui xihuan kan.
   Luxun's novel Zhangsan most like read
   "Zhangsan likes to read Luxun's novels most."

IV. D-linked *shei . . . zui* "who . . . most"

1. *Wh*-questions of *shei . . . zui* "who . . . most" with D-linked *shei* "who" topicalized (experimental)
   (Xiao Wang, Xiao Liu, Xiao Li, zhe jige nuhai dangzhong,) shei Zhangsan zui xiang jian?
   (Xiao Wang, Xiao Liu, Xiao Li, these few girls among) who Zhangsan most like meet
   "(Of the girls, i.e., Xiao Wang, Xiao Liu, and Xiao Li,) who does Zhangsan like to meet most?"
2. *Wh*-questions of *zui . . . shei* "most . . . who" with D-linked *shei* "who" in situ (in situ control)
   (Xiao Wang, Xiao Liu, Xiao Li, zhe jige nuhai dangzhong,) Zhangsan zui xiang jian shei?
   (Xiao Wang, Xiao Liu, Xiao Li, these few girls among) Zhangsan most like meet who
   "(Of the girls, i.e., Xiao Wang, Xiao Liu, and Xiao Li,) who does Zhangsan like to meet most?"
3. Affirmative sentences with a topicalized NP (NP-topicalization control)
   (Xiao Wang, Xiao Liu, Xiao Li, zhe jige nuhai dangzhong,) Xiao Wang Zhangsan zui xiang jian.
   (Xiao Wang, Xiao Liu, Xiao Li, these few girls among) Xiao Wang Zhangsan most like meet
   "(Of the girls, i.e., Xiao Wang, Xiao Liu, and Xiao Li,) Zhangsan likes to meet Xiao Wang most."

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V. Non-D-linked *wh*-element

1. **Wh*-questions with non-D-linked *shenme*-NP "what-NP" topicalized (experimental)
   **Shenme wai yu Xiao Wang zai xuexi?*
   what foreign language Xiao Wang PROG study
   "What foreign language is Xiao Wang studying?"

2. *Wh*-questions with non-D-linked *shenme*-NP "what-NP" in situ (in situ control)
   Xiao Wang zai xuexi shenme wai yu?
   Xiao Wang PROG study what foreign language
   "What foreign language is Xiao Wang studying?"

3. **Wh*-questions with non-D-linked *shenme* "what" topicalized (experimental)
   **Shenme ta xihuan chi?*
   what he like eat
   "What does he like to eat?"

4. *Wh*-questions with non-D-linked *shenme* "what" in situ (in situ control)
   Ta xihuan chi shenme?
   he like eat what
   "What does he like to eat?"

5. **Wh*-questions with non-D-linked *shei* "who" topicalized (experimental)
   **Shei ni xihuan?*
   who you like
   "Who do you like?"

6. *Wh*-questions with non-D-linked *shei* "who" in situ (in situ control)
   Ni xihuan shei?
   you like who
   "Who do you like?"

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